

# Periodic Transformation with Ecological Justice Education Approach for Tianyar Coastal Communities in Realizing SDGs

Ni Ketut Sari Adnyani<sup>1</sup>, I Made Agus Wirawan<sup>2</sup>, Ni Made Wiratini<sup>3</sup>, I Made Dwi Cahya Prayogi Putra<sup>4</sup>, Ni Kadek Mira Pratiwi<sup>5</sup>  
[sari.adnyani@undiksha.ac.id](mailto:sari.adnyani@undiksha.ac.id)<sup>1</sup>, [imade.aguswirawan@undiksha.ac.id](mailto:imade.aguswirawan@undiksha.ac.id)<sup>2</sup>,  
[made.wiratini@undiksha.ac.id](mailto:made.wiratini@undiksha.ac.id)<sup>3</sup>, [dwi.cahya@student.undiksha.ac.id](mailto:dwi.cahya@student.undiksha.ac.id)<sup>4</sup>,  
[mira.pratiwi@student.undiksha.ac.id](mailto:mira.pratiwi@student.undiksha.ac.id)<sup>5</sup>

Universitas Pendidikan Ganesha, Indonesia<sup>1,2,3,4,5</sup>

**Abstract.** The purpose of implementing the activity is to support the Sustainable Development Goals (TPB) through partnership programs to achieve goals, maintain marine ecosystems and realize a healthy and prosperous life. Methods: socialization, training, technology application, mentoring and evaluation and program sustainability. The results of implementing technology application in this community service are in the form of training in the fields of: (1) production, including: (a) innovating products with catfish cultivation techniques; (b) Creating a brand image through YouTube media. (2) management, including (a) natural resource management, preparation of periodic transformation programs with an ecologically just education approach to be used as standard operating procedures by partners at TPI Tianyar; (b) HR management, Technology transfer in marine ecological conservation that is in line with the objectives of TPB to form a mindset to maintain the marine ecosystem of partners as conservation cadres to maintain ecology.

**Keywords:** smart justice; ecology; sea; fisherman; Tianyar.

## 1 Introduction

Around  $\pm 30\%$  of the  $\pm 3,000$  hectares of coral reef area in the waters of Karangasem Regency, Bali has been damaged. The causal factor, based on initial observations, is the finding that the catch of fishermen in the coastal area is decreasing and there is almost no habitat and hiding place for fish. After conducting an investigation, the history of coral reef damage occurred due to irresponsible actions in the past, namely in the period up to  $\pm 1950s$ , Tianyar Beach was a trading port where ships anchored [1]. Extinction, due to the activities of the surrounding community who exploited coral reefs by crushing them into a fine white powder used in building houses. Recently, the marine ecosystem has been polluted by plastic waste and several fishing activities have been found using unsustainable fishing practices. The decline in the quality and quantity of coral reefs has also become a concern for academics at Ganesha University of Education. Several studies have been conducted, but are still limited to ecological

management only, including research on local-scale coastal and marine management practices that are still sustainable to this day, but community service by directly involving coastal communities in this case fishing communities has not been carried out. The lack of sustainable economic aspects, and only focusing on protecting ecological values are the reasons for failure [2]. The initial step in efforts to handle marine ecosystem damage, namely field exploration related to accurate marine and coastal conditions in Tianyar to obtain appropriate handling of the problems of fishing group partners as a basis for management, including sustainable exploration, protection and prevention of pollution and degradation.

The form of community service mechanisms emphasizes conservation by implementing customary law in the indigenous people of Tianyar Village, Karangasem Regency. Customary law as a guideline in interacting with the resource environment, functions to regulate and control the ecosystem while preventing excessive exploitation practices. Local communities apply moral and ethical standards in their relationship with nature [3]. In line with Hindu teachings in Bali, the fulfillment of the Palemahan element as part of the Tri Hita Karana concept (three causes of human happiness). This service model is then integrated using a participatory mapping method with a participatory action research (PAR) approach. Mapping is carried out as a guideline for the community to understand the problem objects of partners in coastal and marine areas in the Tianyar area. The results of downstreaming community service make it easier for the Food Security and Fisheries Service of Karangasem Regency to formulate maritime conservation policies, carry out planning, checking and programming of coral reef conditions periodically and sustainably [4].

The purpose of implementing the activity is to support the Sustainable Development Goals (SDGs) through partnership programs to achieve goals, maintain marine ecosystems and realize a healthy and prosperous life. Related to MBKM, IKU, the activity was carried out with 2 students in order to support MBKM activities. The Main Performance Indicator is IKU 2, students gain experience outside the campus, while lecturers carry out activities outside the campus and get the opportunity to apply the results of innovation to the community (IKU 3 and 5). The focus of this Community Service targets the production and management fields of partners.

The benefits of implementing activities are: increasing empowerment of partners in the fields of production and management such as increasing knowledge, understanding, skills in the fields of production and management and marketing regarding the management of marine resource potential can be implemented in a balanced manner with conservation efforts [5]. After socialization, training, technology application, mentoring and evaluation and program sustainability. Useful in the formation of environmentally conscious cadres through smart justice education for ecology in maintaining the balance of marine and coastal ecosystems so as to support the realization of Sustainable Development Goals / SDGs.

## **2 Method**

The implementation method of this activity includes: initial steps in the form of planning and preparation which include several aspects, namely: Coordinating with partners regarding the technical implementation of the program; Preparing documents for permits for

implementing activities; Preparing activity planning modules for transplanting methods, Brand Image Creation Strategies in the production sector; Preparing activity planning modules for ecological management justice, human resource management, XAMPP Local Host bookkeeping modules; Preparing marketing technique modules to facilitate access to partner marketing reach; and Preparing evaluation forms to improve partner understanding in the production and management sectors. The stages of program implementation are socialization, training, follow-up, mentoring and evaluation. The analysis was carried out descriptively qualitatively [6].

### **3 Results and Discussion**

Based on the method of implementing activities and division of tasks that have been agreed upon with the team, the initial stage of implementing the activity is that the team prepares planning and preparation on Saturday, June 15, 2024. Furthermore, coordinate directly with partners to determine the schedule for implementing the activity as well as coordinate regarding the location of the activity. The coordination stage with partners also includes technical discussions on program realization. After an agreement with the final partner, the service team prepares a permit to implement the activity. To support the realization of the program, the team together with students also prepare a planning module for transplantation method activities. Discussing in the internal service team meeting forum regarding the form of socialization, training, application of technology and assistance that will be provided to partners which includes a review of the mechanism for creating a brand image strategy in the production sector. The preparation of supporting modules for socialization, training, application of technology and assistance is also carried out such as: preparation of activity planning modules in the field of ecological management justice, human resource management, XAMPP Local Host bookkeeping modules; preparing marketing technique modules to facilitate access to partner marketing reach. For the stage of preparing evaluation forms to improve partner understanding in the fields of production and management. Other supporting elements also prepare training venues, tools and materials, and other equipment. To improve the quality of human resources management, therefore the service team together with partners at the beginning determine justice for ecological cadres and partners of the Segara Baruna Fishermen Group who will be involved in the training.

The results of the implementation of socialization activities, which are carried out after coordination and determination of the program implementation schedule can then be communicated further to PKM partners, namely through the following stages: Saturday, June 22, 2024 held a discussion through FGD with partners. The service team explained the objectives of completing the solutions provided by the PKM team to partners. Together with partners, re-determine the schedule for implementing training, transfer of science and technology and mentoring.

Sunday, June 23, 2024, production and management training was carried out which aims to improve knowledge and skills for partners according to partner problems. The training agenda includes (1) inviting partners according to the predetermined schedule. (2) conducting a pretest to determine the initial skill capabilities of partners as conservation cadres for ecological

conservation, where partners are given 3 (three) forms of pretests related to communication about effective coastal conservation maintenance, a pretest to see the level of partner understanding about effective coastal conservation maintenance in the field of production and management to measure the initial capabilities of periodic transformation efforts with the Justice for Ecology education approach to improve the quality of life and economy. After the pretest ended, the following training was provided: providing material on the role, function, methods and application of Justice for Ecology in the fields of production and management. The implementation of the community service program took place on Saturday and Sunday, continued the following week on Sunday so that partners received training in the fields of production and management for 3 (three) days. Furthermore, the first Posttest was carried out for PKM partners. Partners were given modules, such as: transplantation methods, SOP-based brand image creation strategies, justice in ecological education, XAMPP Local Host bookkeeping, and marketing techniques.

The application of technology in this PKM is in the form of training in the fields of: (1) production, by providing knowledge and insight regarding: (a) Waste filtration and provision of artificial fish collection tools  $\pm 30\%$ ; (b) Implementing product innovation with catfish cultivation techniques according to partner engineering because pomfret and gourami fish which were originally scheduled to be farmed according to partners require strategic land and alternative production costs so that based on the agreement, the catfish cultivation that was tried to be developed was carried out on Saturday, July 6, 2024;. (c) Creating a brand image through YouTube media  $\pm 40\%$ . This implementation is pending after the partner is able to carry out the transfer of knowledge and technology during the training and mentoring process which can be applied properly by the partner. (2) management, including (a) natural resource management, 1) preparation of periodic transformation programs with an ecological justice education approach to be used as standard operating procedures by partners at TPI Tianyar  $\pm 35\%$  which will be implemented on Sunday, July 7, 2024 and Wednesday, August 28, 2024. This transfer of science and technology is packaged with an educational approach in the form of providing materials and insights related to ecological conservation and involving coastal and marine environmental cadres; 2) Technology transfer in the field of marine ecological conservation that is in line with the SDGs objectives  $\pm 10\%$ ; 3) Implementation of a combination of real ecological conservation programs with the instillation of ecological justice education from an early age to partners  $\pm 15\%$ . (b) human resource management, including: 1) Transfer of Ecological Justice knowledge through the PKM program to form a mindset for marine ecosystem conservation by partners; 2) Empowerment of partners as conservation cadres in order to maintain ecological sustainability. (c) business management, including: 1) Socialization, counseling and provision of financial input for businesses through the implementation of FGD  $\pm 10\%$ ; 2) Partner training for financial balance calculation  $\pm 20\%$ ; and 3) Training and assistance in the installation of a bookkeeping system that can be stored on a computer with a local host XAMPP setup, (d) Marketing management, including: 1) Market expansion  $\pm 35\%$ . Marketing is targeted in  $\pm 2$  ways, namely manual and online marketing. Partners are fully involved in the marketing technique tutorial process provided by the PKM team; 2) Partnership cooperation by signing the MoU and PKS; and 3) Transfer of knowledge and technology regarding marketing techniques.

The reach is increased to  $\pm 7$  regional locations, then marketing can be directed to all regions in the Province of Bali.

The mentoring stage is carried out in mid-June to November so that an evaluation can be carried out in November to December. At this mentoring stage, the activity agenda is: (1) The PKM Team forms a special team by involving students to become mentors in the field who have been trained. (2) The mentoring program is carried out for 4 (four) months starting from after the 4-month training is completed. (3) The PKM Team prepares a social media account (WhatsApp) for informal consultation purposes between partners, participants and the team in charge. (4) After ongoing mentoring is carried out, the partners involved are given a second posttest to assess skills in the fields of production and management.

Documentation of the implementation of community service activities.



**Figure 1.** Documentation of the implementation of community partnership empowerment activities, scope of community partnership empowerment in 2024.

#### 4 Conclusion

The implementation of community service activities under the DRTPM grant under the coordination of the Ministry of Education, Culture, Research and Technology together with LPPM Undiksha has been carried out with a percentage of 80% targeting the production and management fields of partners. The mentoring and evaluation stages are still ongoing to achieve the remaining target of  $\pm 20\%$  so that the level of mastery of knowledge, skills in the fields of production and management can be developed independently and can create access to opportunities in optimizing businesses with HR management training so that they are able to manage productive natural resources from smart justice for ecological cadres.

Intensive coordination with important partners is reformatted in the future considering that from the experience of implementing PKM, important program applications are re-communicated to be adjusted in responding to current partner interests. Review of science and technology transfer facility activities, need to be adjusted again before being finalized considering that the level of readiness of science and technology applications returns to the readiness of partner technology as the target subject of users must be discussed again so that

readiness constraints including support for facilities and infrastructure become considerations. Consideration of the priority scale is a benchmark for mutual agreement in choosing a community service activity agenda that is in accordance with partner requests and is of a nature that has income generation by partners in a sustainable manner in supporting the realization of SDGs. Student involvement in supporting the MBKM program needs to be increased proportionally with the number of students so that in addition to getting recognition, students gain new insights outside the campus. Downstreaming of community service output is important to be developed by each lecturer in supporting the achievement of Undiksha's IKU.

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